भारतीय मानक
Indian Standard

IS 1462 : 2019

सौन्दर्य प्रसाधन उद्योग के लिये टैल्क — विशिष्ट

(चौथा पुनरीक्षण)

Talc for Cosmetic Industry — Specification

(Fourth Revision)

ICS 71.100.70

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Cosmetics Sectional Committee, PCD 19

FOREWORD

This Indian Standard (Fourth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Cosmetics Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

This standard was originally published in 1959 and subsequently revised in 1967, 1977 and 1985. Initially while reviewing this standard the Committee had agreed to indicate separately the essential and optional requirements. Subsequently this was found non-implementable for certification and therefore, in third revision, only a single set of requirements were stipulated. Further, in this revision, based on inter-laboratory testing, the limit of acid soluble iron had been revised and a new requirement of acid soluble matter was introduced.

Fourth revision of this standard was taken up to specify the requirement of absence of asbestos due to carcinogenicity related to it, and its test methods. In this revision, all the four amendments issued to its previous version (1985) have also been incorporated appropriately.

In the cosmetic industry, talc is generally used in the manufacture of talcum powder, face powder, depilatories and cold and other creams. In cosmetics prepared from talc, freedom from grit is an important attribute. In the absence of any reproducible method of test for this characteristic, the following method may be used:

> Take a 20 g sample of the material in a breaker and wet it with a little rectified spirit. Remove by over-flow in a carefully controlled steady stream of water, a large portion of the material. The grit being heavier will remain in the beaker along with some talc. Test the residue by rubbing between finger and thumb for the presence of grit.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TALC FOR COSMETIC INDUSTRY — SPECIFICAITON

(Fourth Revision)

1 SCOPE

The standard prescribes the requirements and methods of sampling and test for talc used in cosmetic industry.

2 REFERENCES

The following standard contains provisions, which through reference in this text, constitutes provisions of this standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below:

IS No.	*Title*
2088 : 1983	Methods for determination of arsenic (*second revision*)

3 REQUIREMENTS

3.1 Description

3.1.1 Talc shall be finely powdered mineral consisting essentially of hydrated magnesium silicate. It shall be odourless.

3.1.2 Talc shall be free from gritty particles when tested as follows:

> Take a 20 g sample of the material in a beaker and wet it with a little rectified spirit. Remove by over-flow in a carefully controlled steady stream of water, a large portion of the material. The grit being heavier will remain in the beaker along with some talc. Test the residue by rubbing between finger and thumb for the presence of grit.

3.1.3 The colour of talc shall not change when heated for 5 min at 200°C.

3.1.4 The whiteness, slip and lustre of talc shall be as agreed to between the purchaser and the supplier.

3.2 Talc shall also comply with the requirements laid down in Table 1 when tested according to the methods given in col 4 of Table 1.

Table 1 Requirements for Talc for Cosmetic Industry

(*Clause* 3.2)

Sl No.	Characteristic	Requirement	Method of Test, Ref to Annex
(1)	(2)	(3)	(4)
i)	Fineness:		A
	a) Retained on 150 micron IS sieve, percent by mass, *Max*	0.1	
	b) Retained on 90 micron IS sieve, percent by mass, *Max*	2.0	
	c) Analysis on sieves finer than 90 micron	To be reported	
ii)	*p*H of aqueous suspension, *Max*	9.5	B
iii)	Matter soluble in water, percent by mass, *Max*	0.2	C
iv)	Heavy metals (as Pb), ppm, *Max*	20	D
v)	Arsenic (as As_2O_3), ppm, *Max*	2	E
vi)	Magnesium (as MgO), percent by mass, *Min*	20.0	F
vii)	Bulk density	As agreed to between the purchaser and the supplier	G
viii)	Loss on ignition, percent by mass, *Max*	7.0	H
ix)	Carbonates	To pass the test	J
x)	Acid soluble iron, percent by mass, *Max*	0.75	K
xi)	Water soluble iron salts	To pass the test	L
xii)	Acid soluble matter, percent by mass, *Max*	6	M
xiii)	Loss on drying, percent by mass, *Max*	1	N
xiv)	Asbestos	Absent	P

4 PACKING AND MARKING

4.1 Talc shall be packed in well closed containers as agreed to between the purchaser and the supplier.

4.2 Marking

4.2.1 The packages shall be securely closed and legibly marked with the following information:

a) Name of material;
b) Manufacturer's name and/or his recognized trade-mark, if any;
c) Net mass of talc in the package;
d) Batch number to enable the lot of manufacture to be traced back from records;
e) Month and year of manufacture; and
f) Any other information required by statutory authorities.

4.2.2 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

5 SAMPLING

The method for preparing representative test samples of the material and criteria for conformity shall be as prescribed in Annex Q.

6 QUALITY OF REAGENTS

Unless specified otherwise, pure chemicals and distilled water [*see* IS 1070 : 1992 Reagent grade water — Specification (*third revision*)] shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the result of analysis.

ANNEX A

[*Table* 1, *Sl No.* (i)]

DETERMINATION OF FINENESS

A-1 PROCEDURE FOR MATERIAL RETAINED ON 150 MICRON IS SIEVE

A-1.1 Place about 10 g of the material, accurately weighed, in 150 micron IS sieve and wash by means of slow stream of running tap water and finally with fine stream from a wash bottle until all the material that can pass through the sieve. Place sieve containing the residue on a steam bath. Carefully transfer the residue on to a tared watch glass, dry it to constant mass at 105 ± 2°C and weigh.

A-1.2 Calculation

Material retained on the specified sieve,

$$\text{percent by mass} = \frac{100 \times M_1}{M}$$

where

M_1 = mass of the residue retained on the sieve, in g; and

M = mass of the material taken for the test, in g.

A-2 PROCEDURE FOR MATERIAL RETAINED ON 90 MICRON IS SIEVE

Carry out the test as prescribed under **A-1.1**, using a fresh quantity of the material and 90 micron IS sieve. Calculate in the manner given under **A-1.2.**

A-3 PROCEDURE FOR ANALYSIS ON SIEVES FINER THAN 90 MICRONS

Carry out the procedure prescribed in **A-1.1,** using a fresh quantity of the material and IS sieves as agreed to between the purchaser and the supplier. Calculate in the manner given under **A-1.2**.

ANNEX B

[*Table* 1, *Sl No.* (ii)]

DETERMINATION OF *p*H

B-1 OUTLINE OF THE METHOD

An aqueous extract of the material is tested for determining the *p*H value.

B-2 APPARATUS

B-2.1 *p*H Meter, equipped with glass electrode or bulb electrode.

B-3 PROCEDURE

Boil about 10 g of the material, accurately weighed, with 50 ml of water for 30 min. Add water from time to time to maintain approximately the original volume of the liquid. Cool and filter. Determine the *p*H of the filtrate within 5 min of filtration and preserve the filtrate for test under Annex C**.**

ANNEX C

[*Table* 1, *Sl No.* (iii)]

DETERMINATION OF MATTER SOLUBLE IN WATER

C-1 PROCEDURE

Evaporate the filtrate preserved under **B-3** in a tared evaporating dish on a stream-bath and finally dry constant mass in an oven at 105 ± 2°C.

NOTE — Appropriate precaution should be taken for minimal loss of filtrate.

C-2 CALCULATION

$$\text{Matter soluble in water percent by mass} = 100\frac{m}{M}$$

where

m = mass of the residue obtained, in g; and

M = mass of the material taken for the test, in g.

ANNEX D

[*Table* 1, *Sl No.* (iv)]

TEST FOR HEAVY METALS

D-1 OUTLINE OF THE METHOD

The brown colour produced by the material with hydrogen sulphide solution is matched against that produced with standard lead solution.

D-2 APPARATUS

D-2.1 Nessler Cylinders — 50 ml capacity.

D-3 REAGENTS

D-3.1 Perchloric Acid — 60 percent (*m/m*).

D-3.2 Hydrofluoric Acid — 40 percent (*m/m*).

D-3.3 Citric Acid — solid.

D-3.4 Ammonium Hydroxide — Dilute one volume of liquor ammonia (relative density 0.90) with 10 volumes of water.

D-3.5 Hydrogen Sulphide Solution — Saturated solution, freshly prepared.

D-3.6 Standard Lead Solution — Dissolve 1.600 g of lead nitrate in water and make up the solution to exactly 1 000 ml. Pipette out 10 ml of the solution and dilute it again with water to 1 000 ml. One millilitre of the final solution contains 0.01 mg of lead (Pb). The solution should be freshly prepared.

D-3.7 Bromophenol Blue Indicator

D-4 PROCEDURE

Place 2.000 g of the material, accurately weighed, in a platinum dish and incinerate for about 2 h at 525 to 550°C. Cool and treat with 5 ml of perchloric acid. Take to fumes on a hot plate with three successive portions of hydrofluric acid. Cool and dilute with water. Filter the solution, if necessary, with suction, through a fine fritted glass filter catching the filtrate in a 500 m1 glass-stoppered conical flask. Transfer the solution to a Nessler cylinder. Add 10 g of citric acid and adjust to *p*H 3.0 to 3.4 by adding dilute ammonium hydroxide (yellow to purple colour with bromophenol blue indicator). Add 10 ml of hydrogen sulphide solution and mix. Carry out simultaneously a control test using 4 ml of standard lead solution and the same quantities of other reagents as used with the material. Allow the cylinders to stand for 10 min and compare the colour in the two cylinders.

D-4.1 The material shall be taken as having satisfied the requirement prescribed in Table 1, if the intensity of the colour produced in the test with the material is not greater than that produced in the control test.

ANNEX E

[*Table* 1, *Sl No.* (v)]

TEST FOR ARSENIC

E-1 OUTLINE OF THE METHOD

The stain obtained on a mercuric bromide paper by arsenic is compared with that obtained with standard arsenic solution.

E-2 REAGENTS

E-2.1 Concentrated Sulphuric Acid, analytical reagent grade [*see* IS 266 : 1993 'Sulphuric acid — Specification (*third revision*)'].

E-2.2 Concentrated Nitric Acid, analytical reagent grade [*see* IS 264 : 2005 'Nitric acid Specification (*third revision*)'].

E-2.3 Hydrofluoric Acid

E-2.4 Mixed Acid — Dilute one volume of concentrated sulphuric acid with four volumes of water, and to this add 10 g of sodium chloride for each 100 ml of the solution.

E-2.5 Ferric Ammonium Sulphate Solution — Dissolve 84 g of ferric ammonium sulphate in water with 10 ml of mixed acid and make up to 1 litre.

E-2.6 Concentrated Hydrochloric Acid analytical reagent grade [*see* IS 265 : 1993 'Hydrochloric acid — Specification (*fourth revision*)].

E-2.7 Stannous Chloride Solution — Dissolve 80 g of stannous chloride in 100 ml of water containing 5 ml of concentrated hydrochloric acid.

E-3 PROCEDURE

E-3.1 Place 1.000 g of the material, accurately weighed, in a platinum dish and incinerate for about 2 h at 525 to 550°C. Cool and treat with a mixture of 5 ml concentrated sulphuric acid and 5 ml of concentrated nitric acid. Take to fumes on hot-plate. Cool and again take to fumes with three successive portions of hydrofluoric acid. Cool and dissolve cautiously in water and make up the volume to exactly 100 ml.

E-3.2 Carry out the test for arsenic as directed in IS 2088, taking 10 ml of the solution prepared in **E-3.1** into a Gutzeit bottle, then add to it 20 ml of water, 2 ml of ferric ammonium sulphate solution and 0.5 ml of stannous chloride solution. Compare the stain obtained with that produced with 0.000 2 mg of arsenic trioxide (As_2O_3).

ANNEX F

[*Table* 1, *Sl No.* (vi)]

DETERMINATION OF MAGNESIUM

F-1 PRINCIPLE

On fusion with anhydrous sodium carbonate, magnesium silicate gets converted into magnesium oxide which is then titrated against standard EDTA solution.

F-2 REAGENTS

F-2.1 Concentrated Hydrochloric Acid

F-2.2 Strong Ammonia Solution

F-2.3 Anhydrous Sodium Carbonate

F-2.4 Standard EDTA Solution — 0.05 M.

F-2.5 Strong Ammonia — Dissolve 6.75 g of ammonium chloride in 74 ml of strong ammonia solution and dilute to 100 ml with water.

F-3 PROCEDURE

Weigh accurately a clean, dry platinum crucible containing approximately about 0.2 g of anhydrous sodium carbonate. Weigh it accurately about 0.12 g of talc sample, followed by a further quantity of approximate 0.4 g of anhydrous sodium carbonate. Fuse the mixture by heating the crucible with the lid over a flame for about 30 min. Extract the fused mass with instalments of about 3-4 ml of concentrate. Hydrochloric acid (crush the fused mass with a glass rod to facilitate the extraction) and transfer quantitatively to 150 m1 beaker. Wash the crucible and the lid with water and transfer to the beaker. Dissolve by stirring and gentle crushing with the glass rod and boil, if required for complete digestion. Cool and neutralise by slowly adding ammonia solution till a white precipitate appears. Add a little excess of ammonia.

Cool and filter through a wet filter paper into 500 ml conical flask. Give washings with distilled water. Add 10-12 ml strong ammonia, ammonium chloride solution, a pinch of solo chrome black indicator and titrate against standard 0.05 M EDTA solution to a blue end point.

F-4 CALCULATION

Magnesium as MgO, percent by mass =

$$\frac{V \times 0.002015 \times M}{W \times 0.05}$$

where

V = volume of 0.05 M EDTA solution, in ml;
M = molarity of EDTA solution; and
W = mass of talc taken for fusion, in g.

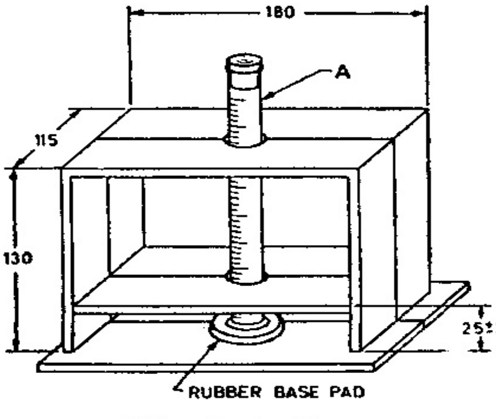
ANNEX G

[*Table* 1, *Sl No.* (vii)]

DETERMINATION OF BULK DENSITY

G-1 APPARATUS

G-1.1 Assemble the apparatus as shown in Fig. 1. The base of the measuring cylinder A shall be ground flat and the empty measuring cylinder together with the rubber bung shall weigh 250 ± 5 g. It shall be accurately calibrated to 250 ml with an error, if any, of less than one millilitre. The distance between 0 and 250 ml graduation on the measuring cylinder shall not be less than 220 mm and not more than 240 mm. The distance between the fiat-ground part of the base of measuring cylinder and the rubber base pad, when the measuring cylinder is raised to the full height shall be 25 ± 2 mm.



All dimensions in millimetres.

Fig. 1 Apparatus for Determination of Bulk Density

G-1.2 The rubber base pad shall have a shore hardness of 42 to 50.

G-1.3 Pans of the balance shall be at least 10 cm in diameter and the balance shall be sensitive to less than 0.1 g.

G-2 PROCEDURE

Sieve about 40 g of the material through 250 micron IS sieve on to a tared glazed paper and weigh it accurately. Slip the powder gently and smoothly into the measuring cylinder which should be held at 45° to the vertical, without knocking or squeezing. Assemble the apparatus as shown in Fig. 1. With the thumb and four fingers of one hand, gently grasp the upper part of the cylinder, and within 1 s lift it about 25 mm (taking care not to jerk the cylinder by knocking it against the upper) and let it drop. Note the volume after dropping it once. Continue lifting and dropping until 50 complete drops have been given to the cylinder. During this operation give a gentle turn of about 10° in the clockwise direction to the cylinder after every two drops. As soon as 50 drops are completed, raise the cylinder to eye level and read the volume of the material.

G-3 CALCULATION

Bulk density in g/ml

a) After one drop = $\frac{m}{V_1}$

b) After 50 drops = $\frac{m}{V_{50}}$

where

m = mass of the material taken for the test, in g;
V_1 = volume of the material after one drop, in ml; and
V_{50} = volume of the material after 50 drops, in ml.

ANNEX H

[*Table* 1, *Sl No*. (viii)]

DETERMINATION OF LOSS ON IGNITION

H-1 PROCEDURE

Weigh accurately about 4 g of the material in a tared crucible and ignite at red heat to constant mass. Cool in a desiccator and weigh.

H-2 CALCULATION

Loss on ignition, percent by mass = $100\frac{(M-n)}{M}$

where

m = mass of the ignited material, in g; and

M = mass of the material taken for the test, in g.

ANNEX J

[*Table* 1, *Sl No*. (ix)]

TEST FOR CARBONATES

J-1 OUTLINE OF THE METHOD

The material is treated with dilute mineral acid and observed for any effervescence.

J-2 REAGENTS

J-2.1 Dilute Hydrochloric Acid, approximately 0.5 N.

J-3 PROCEDURE

Mix about 5 g of the material, accurately weighed, with 50 ml of dilute hydrochloric acid in a 250 ml beaker. Cover the beaker with a watch-glass and warm the contents on a steam bath. Observe if there is any effervescence, and proceed for test given in Annex K.

J-3.1 The material shall be taken as having passed the test if no effervescence takes place.

ANNEX K

[*Table* 1, *Sl No*. (x)]

DETERMINATION OF ACID SOLUBLE IRON

K-1 OUTLINE OF THE METHOD

All the iron is reduced to ferrous state and then titrated against potassium dichromate solution, using diphenylamine indicator.

K-2 REAGENTS

K-2.1 Ammonium Hydroxide, approximately 4 N.

K-2.2 Dilute Hydrochloric Acid, approximately 4 N.

K-2.3 Concentrated Hydrochloric Acid, [*see* IS 265 : 1993 Hydrochloric acid — Specification (*fourth revision*)].

K-2.4 Stannous Chloride Solution — Dissolve 6 g of crystallized stannous chloride ($SnCl_2.2H_2O$) in 60 ml of concentrated hydrochloric acid and dilute with water to 100 ml. Keep this solution well stoppered.

K-2.5 Mercuric Chloride Solution, saturated.

K-2.6 Titrating Mixture — Mix 150 ml of concentrated sulphuric acid [*see* IS 266 : 1993 Sulphuric acid — Specification (*third revision*)] and 150 ml of phosphoric acid (relative density 1.75) and make up to 1 litre with water.

K-2.7 Diphenylamine Indicator — Dissolve 1 g of diphenylamine in 100 ml of concentrated sulphuric acid.

K-2.8 Standard Potassium Dichromate Solution — 0.04 N [*see* IS 2316 : 1990 'Methods of preparation of standard solutions for colorimetric and volumetric analysis (*second revision*)'].

K-3 PROCEDURE

K-3.1 Digest the contents of the beaker (**J-3**) on a steam-bath for about 30 min and filter through a tared Gooch crucible. Wash the residue thoroughly with hot water. Reject the residue. Make the solution distinctly ammoniacal by the addition of ammonium hydroxide. Bring the solution to boil and allow to stand on steam-bath for 30 min. Filter through a filter paper and wash the precipitate thoroughly with hot water. Dissolve the precipitate by pouring hot dilute hydrochloric acid on the filter paper three or four times in small portions and collect the solution in a conical flask. Wash the filter paper thoroughly with water, collecting the washings also in the same conical flask.

K-3.2 Add about 10 ml of concentrated hydrochloric acid and heat the solution to boiling. Reduce the iron by adding stannous chloride solution drop by drop until the yellow colour of the solution just disappears. Do not add more than 2 to 3 drops stannous chloride solution in excess. Allow the solution to cool and then add in one lot 10 ml of mercuric chloride solution and stir thoroughly. A white precipitate of mercurous chloride is obtained (if instead, a grey or black precipitate is obtained on addition of mercuric chloride, it indicates that reduction has not been effected satisfactorily and the test should be repeated). Dilute the solution to about 150 ml and add 15 ml of titrating mixture and 5 drops of diphenylamine indicator. Titrate with standard potassium dichromate solution until the colour of the solution changes to a deep bluish-violet which does not fade on stirring.

K-4 CALCULATION

$$\text{Iron (as } Fe_2O_3\text{), percent by mass} = \frac{7.985\,V \times N}{M}$$

where

V = volume of standard potassium dichromate solution used in the titration, in ml;

N = normality of the potassium dichromate solution; and

M = mass of the material taken for the test in **J-3**, in g.

ANNEX L

[*Table* 1, *Sl No.* (xi)]

WATER SOLUBLE IRON SALTS

L-1 APPARATUS

L-1.1 Nessler Cylinders, 100 ml capacity.

L-2 REAGENTS

L-2.1 Citric Acid Solution, 20 percent (*m/v*) solution of iron-free citric acid in water.

L-2.2 Thioglycollic Acid

L-2.3 Ammonia Solution, iron-free.

L-2.4 Standard Iron Solution — Take 0.173 g of ferric ammonium sulphate, add 1.5 ml of hydrochloric acid and dilute to 1 000 ml. One millilitre of this solution contains 0.02 mg of iron.

L-3 PROCEDURE

Boil 5 g of the material with 15 ml of water for 30 min, make up any water lost by evaporation, and filter. The filtrate, after the addition of 5 ml nitric acid and dilution to 50 ml with water shall be tested as given below.

L-3.1 To the above solution add 2 ml of citric acid solution and 2 drops of thioglycollic acid, make alkaline with ammonia, dilute to mark with water, and allow to stand for 5 min. Carry out a control test in another Nessler cylinder using 2.0 ml of standard iron solution in place of the material and add 2 ml of citric acid solution, 2 drops of thioglycollic acid, make the solution alkaline with ammonia and dilute to mark with water. Compare the intensity of the colour produced in two cylinders.

L-3.2 The material shall be taken to have passed the test if the intensity of colour produced with the material is not greater than that obtained in the control test.

ANNEX M

[*Table* 1, *Sl No*. (xii)]

ACID SOLUBLE MATTER

M-1 REAGENTS

M-1.1 Dilute Hydrochloric Acid, approximately 4 N.

M-1.2 Sulphuric Acid, *see* IS 266 : 1993 Sulphuric acid — Specification (*third revision*).

M-2 PROCEDURE

Weigh accurately about 2 g of the material and digest with 40 ml of dilute hydrochloric acid for 15 min. Filter, evaporate the filtrate, to the residue add 0.1 ml of sulphuric acid and ignite to constant weight.

M-3 CALCULATION

$$\text{Acid soluble matter, percent by mass} = \frac{100\,m}{M}$$

where

m = loss in mass on drying, in g; and

M = mass of the material taken for the test, in g.

ANNEX N

[*Table* 1, *Sl No*. (xiii)]

DETERMINATION OF LOSS ON DRYING

N-1 PROCEDURE

Weigh accurately about 5 g of the material in a weighed, clean and dry squat form weighing bottle and dry to constant mass at 105 ± 2°C in an oven.

N-2 CALCULATION

$$\text{Moisture, percent by mass} = \frac{100\,m}{M}$$

where

m = loss in mass on drying, in g and

M = mass of the material taken for the test, in g.

NOTE — Moisture analyzer balance (IR type with halogen tube) may also be used for determination of loss on drying. However, in case of any dispute, the oven method as given at **N-1** shall be the referee method.

ANNEX P

[*Table* 1, *Sl No*. (xiv)]

P-1 DETERMINATION OF ASBESTOS

Proceed as prescribed in Method A or Method B. If either test is positive, perform Method C.

P-2 METHOD A

P-2.1 Outline of the Method

This method involves determination of tremolite or chlorite and serpentines by IR spectroscopy.

P-2.2 Apparatus

P-2.2.1 *IR Spectrophotometer*

P-2.3 Reagents

P-2.3.1 *Potassium Bromide*

P-2.4 Procedure

The IR absorption spectrum of a potassium bromide dispersion of talc at the absorption band at 758 ± 1 cm^{-1}, using scale expansion, indicates the presence of tremolite or chlorite. If the absorption band remains after ignition of the substance at 850° for at least 30 min, it indicates the presence of tremolite. In the range 600 cm^{-1} to 650 cm^{-1} using scale expansion, any absorption band or shoulder indicates the presence of serpentines.

P-2.5 Reporting of Results

Absent.

NOTE — Testing requirement of asbestos to be performed in periodic intervals, for example, every quarter if the source of talc is from same ore or the test to be performed again, if the source of talc is getting changed, irrespective to the test performed earlier.

P-3 METHOD B

P-3.1 Outline of the Method

This method involves determination of amphiboles and serpentines by X-ray diffractometer.

P-3.2 Apparatus

P-3.2.1 *X-ray Diffractometer*

P-3.3 Materials and Reagents

Polished glass microscope slide.

P-3.4 Procedure

Cu Kα monochromatic 40 Kv radiation, 24-30 Ma; the incident slit is set at 1°; the detection slit is set at 0.2°; the goniometer speed is 1/10° 2Θ/min; the scanning range is 10°−13° 2Θ and 24°−26° 2Θ; the sample is not oriented. Prepare a random sample, and place on the sample holder. Pack and smooth its surface with a polished glass microscope slide. Record the diffractograms. The presence of amphiboles is detected by a diffraction peak at 10.5 ± 0.1° 2Θ, and the presence of serpentines is detected by diffraction peaks at 24.3 ± 0.1° 2Θ to 12.1 ± 0.1° 2Θ.

P-3.5 Reporting of Results — Absent.

NOTE — Testing requirement of asbestos to be performed in periodic intervals, for example, every quarter if the source of talc is from same ore or the test to be performed again, if the source of talc is getting changed, irrespective to the test performed earlier.

P-4 METHOD C

P-4.1 Outline of the Method — Method involves determination of asbestos by optical microscopy.

P-4.2 Apparatus

Use a microscope that is stable and protected from vibration. The microscope magnification (product of the objective magnification, ocular magnification, and additional magnifying components) must be sufficient to allow adequate characterization of the smallest particles to be classified in the test specimen. The greatest numerical aperture of the objective should be sought for each magnification range. Polarizing filters may be used in conjunction with suitable analyzers and retardation plates. Colour filters of relatively narrow spectral transmission should be used with achromatic objectives, are preferable with apochromats, and are required for appropriate colour rendition in photomicrography. Condensers corrected at least for spherical aberration should be used in the microscope substage and with the lamp. The numerical aperture of the substage condenser should match that of the objective under the conditions of use and is affected by the actual aperture of the condenser diaphragm and by the presence of immersion oils.

P-4.3 Procedure

The presence of asbestos is shown if there is a range of length to width ratios of 20 : 1 to 100 : 1, or higher for fibres longer than 5µm, if there is a capability of splitting into very thin fibrils, and if there are two or more of the following four criteria:

a) Parallel fibers occurring in bundles,
b) Fiber bundles displaying frayed ends,
c) Fibres in the form of thin needles, and
d) Matted masses of individual fibers and/or fibers showing curvature.

P-4.4 Reporting of Results — Absent.

NOTE — 'Testing requirement of asbestos' to be performed in periodic intervals. For example, every quarter if the source of talc is from same ore or the test to be performed again, if the source of talc is getting changed, irrespective to the test performed earlier.

ANNEX Q

(*Clause* 5.1)

SAMPLING OF TALC FOR COSMETIC INDUSTRY

Q-1 GENERAL REQUIREMENTS

In drawing, preparing, storing and handling of test samples, the following precautions and directions shall be observed.

Q-1.1 Samples shall not be taken in an exposed place.

Q-1.2 The sampling instrument shall be clean and dry.

Q-1.3 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination.

Q-1.4 To draw a representative sample, the contents of each container selected for sampling shall be mixed as thoroughly as possible by suitable means.

Q-1.5 The samples shall be placed in clean, dry, air-tight glass or other suitable containers.

Q-1.6 The sample containers shall be of such a size that they are almost completely filled by the sample.

Q-1.7 Each sample container shall be sealed air-tight with a suitable stopper after filling, and marked with full details of sampling, the date of sampling and the year of manufacture of the material.

Q-2 SCALE OF SAMPLING

Q-2.1 Lot

All the containers in a single consignment of the material drawn from a single batch of manufacture shall constitute a lot. If a consignment is declared to consist of different batches of manufacture, the batches shall be marked separately and the groups of containers in each batch shall constitute separate lots.

Q-2.1.1 Samples shall he tested from each lot for ascertaining conformity of the material to the requirements of the specification.

Q-2.2 The number of containers (n) to be chosen from the lot shall depend on the size of the lot (N) and shall be in accordance with col 2 and col 3 of Table 2.

Q-2.3 The containers to be selected for sampling shall be chosen at random from the lot and for this purpose random number tables [*see* IS 4905 : 2015 'Random sampling and randomization procedures (*first revision*)'] shall be used, In case such tables are not available, the following procedure shall be adopted:Starting from any container, count them as 1, 2, 3,..... , etc. up to r and so on in a systematic manner, where r is the integral part of N/n. Every r^{th} container thus counted shall be withdrawn from the lot.

Q-3 TEST SAMPLES AND REFEREE SAMPLE

Q-3.1 Preparation of Test Samples

Draw with an appropriate sampling instrument a small portion of the material from different parts of each container selected as per Table 2. The total quantity of the material drawn from each container shall be sufficient to conduct the tests for all the characteristics given under **3** and shall be not less than 0.2 kg.

Table 2 Number of Containers to be Selected for Sampling

(*Clause* Q-2.2)

Sl No.	Lot Size N	Number of Containers to be Selected n
(1)	(2)	(3)
i)	Up to 50	3
ii)	51 to 150	4
iii)	151 to 300	5
iv)	301 to 500	7
v)	501 and above	10

NOTE — When the number of containers in the lot is less than equal to 3, the number of containers to be selected shall be as agreed to between the purchaser and the supplier.

Q-3.1.1 Thoroughly mix all portions of the material drawn from the same container. Out of these portions, equal quantity shall be taken from each of the selected container and shall be well mixed together so as to form a composite sample weighing not less than 0.5 kg. This composite sample shall be divided into three equal parts, one for the purchaser, another for the supplier and the third for the referee.

Q-3.2 Referee Sample

The referee sample shall consist of the composite sample marked for this purpose and shall bear the seals of the purchaser and the supplier. It shall be kept at a place as agreed to between the purchaser and the supplier and shall be used in case of dispute between the two.

Q-4 NUMBER OF TESTS

Tests for all the requirements given in **3** shall be conducted on the composite sample.

Q-5 CRITERIA FOR CONFORMITY

A lot shall be declared as conforming to this specification if the composite sample satisfies all the requirements given in **3**.

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